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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/534,812	03/24/2000	Shunpei Yamazaki	SEL 169	2789

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EXAMINER

NGUYEN, KEVIN M

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 01/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/534,812

Applicant(s)

YAMAZAKI

Examiner

Kevin M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9,11,13,15,17,19,21,23,51,53 and 55-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9,11,13,15,17,19,21,23,51,53 and 55-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 10/30/2002 is entered. The rejection of claims 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 51, 53, and 55-58 are maintained.

Information Disclosure Statement

2. The information disclosure statement filed 11/01/2002 which has been placed in the application file, the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454).**
5. As to claims 1 and 55-57, Sasaki et al teach an active matrix liquid crystal display device (11) associate a method thereof, the device comprising an X-driver 101, Y-driver 201, an opposing substrate and electrode, a gray-level control circuit (331) controls 5-bit input to a 3-bit output, and only 2-bit data is used to select by the selection circuit (341) the time ratio gray scale $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$, and $\frac{5}{4}$ (311, 313, 315, 317, 319), then processing 3-bit data and 2-bit data at the same time that are controlled by the processing circuit (351) (see figure 39, col. 36, lines 23-34, col. 37, lines 40-55, and col.

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52, lines 10-11), as satisfying the condition $(m-n) = (5-3)$ bit as information for time ratio gray scale, and $m > n$ ($5 > 3$).

Sasaki et al fail to teach optically compensated mode (OCB mode). However, Nakai et al teach an OCB mode liquid crystal may also use (col. 16, lines 66-67). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate an OCB mode liquid crystal taught by Nakai et al for the twist nematic TN liquid crystal of Sasaki et al because a liquid display method is also arbitrary, and may be any type to LCD (col. 16, line 67 to col. 17, line 9 of Nakai et al).

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454), and further in view of Mase et al (US 5,337,171).

As to claim 19, Sasaki et al and Nakai et al teach all of the claimed limitations of claim 1, except for a rear projector 801 having three liquid crystal display devices. However, Mase et al teach a rear projector having three liquid crystal display devices 601 (figure 31, col. 20, lines 36-39). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the LCD of Sasaki et al's and Nakai et al's in the rear projector of Mase et al's because this would be applied to any type of the rear projector (col. 4, lines 49-54 of Mase et al).

7. Claims 3, 5 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454), and further in view of Ito et al (US 5,959,603).

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As to claims 3, 5 and 58, Sasaki et al teach an active matrix liquid crystal display device (11) having a X-driver 101, Y-driver 201, an opposing substrate and electrode, a gray-level control circuit (331) controls 5-bit input to a 3-bit output, and only 2-bit data is used to select by the selection circuit (341) the time ratio gray scale $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$, and $\frac{5}{4}$ (311, 313, 315, 317, 319), then processing 3-bit data and 2-bit data at the same time that are controlled by the processing circuit (351) (see figure 39, col. 36, lines 23-34, col. 37, lines 40-55, and col. 52, lines 10-11), as satisfying the condition $(m-n)=(5-3)$ bit as information for time ratio gray scale, and $m>n$ ($5>3$).

Figure 5 taught by Sasaki et al show a gray level voltage in accordance with a logic gray level used four frame period control (2^{m-n} subframe), inherently applying voltage which makes an orientation of liquid crystal to a bend orientation on starting display of the four subframe.

Sasaki et al fail to teach optically compensated mode (OCB mode). However, Nakai et al teach an OCB mode liquid crystal may also use (col. 16, lines 66-67). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate an OCB mode liquid crystal taught by Nakai et al for the twist nematic mode TN liquid crystal of Sasaki et al because a liquid display method is also arbitrary, and may be any type to LCD (col. 16, line 67 to col. 17, line 9 of Nakai et al).

Therefore, Sasaki et al and Nakai et al teach all of the claimed limitations of claims 3-6, except for forming an image for one frame image comprising 2^{m-n} subframes by performing voltage gray scale method. However, Ito et al teach voltage waveforms applying in according with gray scale having one frame period F, one frame period F

divides into four-subframe t1, t2, t3, and t4 (see abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the waveforms taught by Ito et al for the TFT-LCD of Sasaki et al and Nakai et al in this order to drive the TFT-LCD.

8. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 6,020,869) in view of Nakai et al (US 6,072,454) in view of Ito et al, and further in view of Mase et al.

As to claims 21 and 23, Sasaki et al, Nakai et al, and Ito et al teach all of the claimed limitations of claims 3 and 5, except for a rear projector 801 having three liquid crystal display devices. However, Mase et al teach a rear projector having three liquid crystal display devices 601 (figure 31, col. 20, lines 36-39). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the LCD of Sasaki et al's, Nakai et al's, and Ito et al's in the rear projector of Mase et al's because this would be applied to any type of the rear projector (col. 4, lines 49-54 of Mase et al).

9. Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al as applied to claim 1 above, and further in view of Ishida et al (US 6,069,609).

As to claims 7 and 13, Sasaki et al and Nakai et al teach all of the claimed limitation of claim 1, except for the positive number m is 10 and the positive number n is 2. However, Ishida et al teach a gray scale circuit having a n bit input data signal and m bit output data signal (figure 26) with $m < n$ (col. 2, line 44). It would have been obvious to

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a person of ordinary skill in the art at the time of the invention to incorporate the n bit input and m bit output taught by Ishida et al for the gray scale circuit 301 of Sasaki in order to assign m is 10 and n is 2.

10. Claims 9, 11, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al in view of Ito et al as applied to claims 3 and 5 above, and further in view of Ishida et al (US 6,069,609).

As to claims 9, 11, 13, 15 and 17, Sasaki et al, Nakai et al, and Ito et al teach all of the claimed limitation of claims 3 and 5, except for the positive number m is 12 and the positive number n is 4. However, Ishida et al teach a gray scale circuit having a n bit input data signal and m bit output data signal (figure 26) with $m < n$ (col. 2, line 44). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the n bit input and m bit output taught by Ishida et al for the gray scale circuit 301 of Sasaki in order to assign m is 12 and n is 4.

11. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al as applied to claim 1 above, and further in view of Kusano et al (US 5,677,704).

As to claim 49, Sasaki et al and Nakai et al teach all of the claimed limitations of claim 1, except for a notebook type personal computer. However, Kusano et al teach a liquid crystal display device being applied to the laptop computer 10 (figure 1, col. 5, lines 16-18). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the laptop computer 10 taught by Kusano et al for the LCD of Sasaki et al because a laptop computer 10 is applicable to the invention.

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12. Claims 51 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al in view of Nakai et al in view of Ito et al as applied to claims 3 and 5 above, and further in view of Kusano et al.

As to claims 51 and 53, Sasaki et al, Nakai et al and Ito et al teach all of the claimed limitations of claims 3 and 5, except for a notebook type personal computer. However, Kusano et al teach a liquid crystal display device being applied to the laptop computer 10 (figure 1, col. 5, lines 16-18). It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the laptop computer 10 taught by Kusano et al for the LCD of Sasaki et al because a laptop computer 10 is applicable to the invention.

Response to Arguments

13. Applicant's arguments filed 10/30/2002 have been fully considered but they are not persuasive.

14. In response to applicant's argument that claims 1, 3, 5, 55, 57 and 58 recite "only (m-n) bit as information for time ratio grayscale." This argument is not persuasive because Sasaki et al's invention teach "a gray-level control circuit (331) controls 5-bit input to a 3-bit output, and only 2-bit data is used to select by the selection circuit (341) the time ratio gray scale $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$, and $\frac{5}{4}$ (311, 313, 315, 317, 319), then processing 3-bit data and 2-bit data at the same time that are controlled by the processing circuit (351) (see figure 39, col. 36, lines 23-34, col. 37, lines 40-55, and col. 52, lines 10-11)."

For these reasons, the rejections based on Sasaki et al have been maintained.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kevin M. Nguyen** whose telephone number is **703-305-6209**. The examiner can normally be reached on MON-THU from 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reached on **703-305-4709**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:


(703) 872-9314 (for Technology Center 2600 only)

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Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Kevin M. Nguyen
Examiner
Art Unit 2674



RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600